This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims

1. (Currently amended) A method for separating detection channels, comprising the steps of:

providing a sample with at least two fluorescent dyes;

exciting at least two fluorescent dyes with light of different wavelengths, wherein a number of different wavelengths does not exceed the number of fluorescent dyes in the sample, and obtaining a measured ~~an~~ emission spectrum of the sample;

determining wavelength separation points of the emission spectrum in order to allocate a corresponding portion of the measured emission spectrum to a corresponding detection channel; ~~and~~

finding a difference between intensities of an emission spectrum of one florescent dyes of at least two dyes present in the sample measured at a certain wavelength and intensities of the measured emission spectrum of at least two dyes present in the sample measured at the same wavelength;

squaring the difference;

minimizing an integral of the square of the difference; and

adjusting separation between at least two detection channels in such a way that different portions of the measured emission spectrum between the wavelength separation points are detected by different detection channels,

wherein the separation points between the portions of the measured emission spectrum are calculated ~~determined~~ by minimizing the integral of the square.

~~an integral of a square of a difference between an emission spectrum of one fluorescent dye present in the sample and measured emission spectra of at least two dyes present in the sample.~~

2. (Previously presented) The method as defined in Claim 1, wherein the wavelength separation points of the portions of the emission spectrum are defined by intersection points of the individual spectra of each fluorescent dye in the sample.

3. (Canceled)

4. (Canceled)

5. (Previously presented) The method as defined in Claim 1, wherein detection in the corresponding detection channel is performed with at least one detector element.

6. (Original) The method as defined in Claim 5, wherein the detector element comprises several detector elements grouped together.

7. (Original) The method as defined in Claim 6, wherein signals of several detectors of a multi-anode photomultiplier are grouped together into one channel.

8. (Original) The method as defined in Claim 5, wherein the at least one detector element is a photomultiplier.

9. (Previously presented) The method as defined in Claim 1, wherein adjusting the separation between at least two channels is done by a selection means.

10. (Original) The method as defined in Claim 9, wherein the selection means is a micromirror array.

11. (Previously presented) The method as defined in Claim 9, wherein the selection means is a spectral photometer (SP) module.

12. (Previously presented) The method as defined in Claim 11, wherein the SP module comprises a mirror stop arrangement adjusted in such a way that each of the wavelength regions defined by the wavelength separation points is allocated, respectively, to one individual detection channel.

13. (Previously presented) The method as defined in Claim 1, wherein the wavelength separation points are determined by a computer system.

14. (Previously presented) The method as defined in Claim 13, wherein the data corresponding to the wavelength separation points are presented to a user on a display.

15. (Original) The method as defined in Claim 14, wherein the user adjusts the mirror stop arrangement on the basis of the data presented on the display.

16. (Previously presented) The method as defined in Claim 13, further comprising automatically adjusting the mirror stop arrangement or the micromirror array is automatically adjusted in such a way that each wavelength region defined by the wavelength separation points is allocated to one its respective detection channel.

17. (Canceled)